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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,435	07/29/2003	Jeffrey A. Read	ARL 01-28	5299

37064 7590 11/17/2005

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EXAMINER

KALAFUT, STEPHEN J

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

11

Office Action Summary	Application No. 10/628,435	Applicant(s) READ, JEFFREY A.	
	Examiner Stephen J. Kalafut	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 9-11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>24 October 2003</u> . | 6) <input type="checkbox"/> Other: ____ |

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Claims 5 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "high surface area" in claims 5 and 6 is a relative term which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 7, 8, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Shoji *et al.* (US 5,626,985).

Shoji *et al.* disclose a lithium battery (column 1, lines 51-57) with a cathode that includes MnO₂, carbon powder and a fluoropolymer binder, in respective weight percentages of 80, 10 and 10 (column 2, line 64 through column 3, line 1). Since these are the same materials presently claimed, any recited properties would inherently accrue.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 12-14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kelley *et al.* (US 6,322,744).

Kelley *et al.* disclose a battery cathode including an active material such as LiMn_2O_4 , LiCoO_2 and LiNiO_2 (column 8, lines 19-22); a carbon black conductive additive (column 7, lines 19-24); and a fluoropolymer binder (column 8, lines 31-34). The relative amounts of these components would fall into or overlap the ranges presently recited (column 7, lines 19-24). While the cathode of Kelley *et al.* is for a lithium cell (column 8, line 15), recitations of intended use, such as “for a metal-air battery” do not distinguish. Since the “high-surface area” recited for the carbon black is indefinite in scope (as stated above), the carbon black would meet claims 5 and 6 to the extent that they are understood.

Claims 1-7 and 12-14 are rejected under 35 U.S.C. 102(a) and (e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tsushima *et al.* (US 6,558,846).

Tsushima *et al.* disclose a battery cathode including an active material such as LiMn_2O_4 , LiCoO_2 and LiNiO_2 ; a carbon black conductive additive; and a PTFE binder (column 5, line 57 through column 6, line 39). The relative amounts of these components would fall into or overlap the ranges presently recited (column 3, lines 23-25 and column 4, lines 11-14). While the

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cathode of Tsushima *et al.* is for a lithium cell (column 2, lines 8-11), recitations of intended use, such as “for a metal-air battery” do not distinguish. The surface area of the carbon black ranges from 800 to 3,000 m²/g, thus meeting claims 5 and 6 to the extent that they are understood.

Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Kelley *et al.* or Tsushima *et al.*, each in view of Tomiyama *et al.* (US 6,053,953).

Kelley *et al.* or Tsushima *et al.* do not disclose MnO₂, CoO₂, NiO₂, MoS₂ or TiS₂ as cathode active materials. Tomiyama *et al.* disclose all of these compounds for use as active cathode materials (column 7, line 64 through column 8, line 5) in lithium cells (column 5, lines 23-25). For this reason, it would be obvious to use the compounds of Tomiyama *et al.* as the active materials in the cathodes of either Kelley *et al.* or Tsushima *et al.*

Claims 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art cited either herein or by applicants does not disclose a cathode material including MnO₂, carbon and a fluoropolymer binder in the recited relative amounts. While mixtures of these components are known, the amount of MnO₂ is either smaller, where the cathode is used to reduce oxygen from air, or larger, when the cathode itself provides the active material.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamada *et al.* (US 5,472,797) and Chang *et al.* (US 6,593,023) disclose cathode mixtures including carbon and a binder.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sjk



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PRIMARY EXAMINER
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